REMARKS

Claims 1-38 are pending in this case. Claims 12-20 and 35-38 were rejected to and the remaining claims stand rejected. Reconsideration is requested.

First, the Examiner objected to Claims 5 and 6 due to informalities. Both of these claims have been amended to overcome the informalities.

Additionally, Claims 21-23 stand rejected under 35 USC § 112, second paragraph, as being indefinite. Note that Claim 21 has been amended so instead of reciting "the first buffer", it now reads "the data buffer". A similar amendment was made to Claim 22. These amendments are to improve the form of the claim and are not narrowing.

Additionally, a number of the claims have been amended to improve form. Unless a particular amendment is referred to below as intended specifically to distinguish over a reference, the amendments are to improve the form of the claims, not in response to a rejection and are not intended to narrow the claims. Also, the dependencies of some claims have been amended, to broaden them.

The Abstract is amended and shortened.

Claims 1 and 24 stand rejected under 35 USC § 103 as unpatentable over Maturi in view of Oda. Claims 2-12 and 25-34 stand rejected under 35 USC § 103 further in view of Suzuki.

Claims 13-20 and 35-38 were indicated as being allowable if rewritten in independent form. Therefore, see new Claims 39 and 40 added herein. Claim 39 recites the language of original Claim 1 in combination with Claim 12 and Claim 13. New Claim 40 recites the language of original base Claim 24 in combination with Claims 34 and 35. Hence Claims 39 and 40 are allowable for the reasons as indicated by the Examiner as pertaining to original Claims 13 and 35 respectively.

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With regard to the rejections under 35 USC § 103, each of independent Claims 1 and 24 have been amended. Specifically, Claim 1 as amended now recites "a stream demultiplexer demultiplexing and depacketizing data bytes having timing information and storing the demultiplexed and depacketized data bytes in a data buffer without their timing information being stored in the data buffer." (Emphasis added.) Somewhat similar amendments have been made to Claim 24 which is the independent method claim. Hence these claims as amended are directed to the feature shown in Fig. 1 and described in the specification at page 3, lines 21-28, and page 7, line 25, through page 8, line 9. As stated at page 3, beginning line 21:

> Because the stream demultiplexer removes all the timing information from the data before storing in the storage buffer, the tasks performed by the audio and the video decoders are simplified. Furthermore, because the CPU is a component that makes all the decisions about the particular data and their decode time, the audio and video decoders have vastly simplified tasks.

Further at page 7, beginning line 27:

> Thereafter, SD 26 depacketizes the demultiplexed data, namely, SD 26 removes header 208, details DTS 210 and PTS 212 from each packet 206 before storing the payload 214 in buffer 48. Therefore, audio decoder 34 and audio decoder 36 receive only the payload 214 of data packet 206, which is an advantage of decoder 20.

No such feature appears to be disclosed in the references Oda, Maturi et al., or Suzuki. Specifically see, for instance, Suzuki, col. 9, beginning line 38:

> The coded video data 41 and the video time stamp 42 are transmitted to the video buffer memory 45 and stored therein. After a predetermined time period, the coded video data 41 is delayed and transmitted to the video decoder 50 as delayed coded video data 48.

Further Suzuki at col. 9, beginning line 58:

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> In the audio system, the coded audio data 21 and the audio time stamp (A-PT) 22, separated in the video and audio separator 2, are stored in the audio buffer memory 25.

Hence it is clear that while Suzuki separates the time stamp information, it is stored in the same video and audio buffers as is the video and audio data. Hence, Suzuki does not have the advantage of the feature as described above in accordance with the present invention whereby all the timing information is stripped off before storing the data in the buffers. In accordance with the present invention as described above, only the payload (data without time information) is stored in the video and/or audio buffers. Hence the video and audio decoders receive only the payload, in accordance with the invention, without the time information.

Clearly Suzuki does not have such a process and hence lacks the accompanying advantages as discussed above.

It is not seen where Maturi or Oda disclose any such feature and hence do not appear pertinent.

Hence it is respectfully submitted that Claim 1, with the amendments as discussed above, distinguishes over even the combination of all three references at least by reciting "storing the demultiplexed and depacketized data bytes in a data buffer without their timing information being stored in the data buffer."

Independent Claim 24 recites similar language and hence is similarly allowable.

Moreover, dependent Claim 3 has been amended to recite "the tags being stored in a memory separate from the data buffer." The tags in accordance with Claim 3, of course, carry the messages which include, for instance, the stripped off timing information. In accordance with Claim 3, these are stored in the separate memory. See specification at page 16, line 13.

Hence Claim 3 additionally distinguishes over references, even in combination, at least because of this additional feature.

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Claim 26 as amended recites language similar to Claim 3 as amended and similarly distinguishes over the references.

Claims 2-23 are dependent upon base Claim 1 and allowable for at least the same reason as the base claim, and Claims 25-37 are dependent upon base Claim 24 and allowable for at least the same reason as is the base claim.

Hence it is respectfully entered that the present application with all of Claims 1-39 is allowable. It is requested that this case be passed to issue with all claims allowed. If the Examiner contemplates other action, please contact the undersigned at 408/453-9200.

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Respectfully submitted,

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Appendix A - Version with markings to show changes made to the Claims

1. (Amended) A decoder system comprising:

a stream demultiplexer [for] demultiplexing and depacketizing data bytes having timing information and [for] storing the demultiplexed and depacketized data bytes in a data buffer without their timing information being stored in the data buffer, [said] the stream demultiplexer further generating messages about the stored data and their location in the data buffer; and

a control unit [for] receiving the generated messages and [for] providing in response thereto instructions about the stored data.

2. (Amended) The decoder system of Claim 1 wherein [said] the data bytes are DVD or DVB data bytes.

3. (Amended) The decoder system of Claim 1 [2] wherein the messages [generated by the stream demultiplexer about the audio and the video components of a DVD or DVB data byte] are recorded on tags containing information about the time stamp of the data and their storage location in the data buffer, the tags being stored in a memory separate from the data buffer.

4. (Amended) The decoder system of Claim 3 wherein in response to a [video] tag, [said] the control unit generates a task definition packet specifying the location of [the] video data stored in the data buffer.

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5. (Amended) The decoder system of Claim 4 wherein in response to [a] the task definition packet, a [video decoder of] the decoder system fetches the video data from the data buffer and decodes it at the specified time.

6. (Amended) The decoder system of Claim 5 wherein [said] the control unit responds to [a video] the tag during the intervals between occurrences of a synchronization signal.

7. (Amended) The decoder system of Claim 6 further comprising a [wherein said] video decoder which fetches the video data from the data buffer and decodes it at the specified time during the intervals between occurrences of the synchronization signal.

8. (Amended) The decoder system of Claim 7 wherein during each synchronization cycle, [said] the control unit generates task definition packets for [decode] decoding by the video decoder during the next synchronization cycle, [said] the synchronization cycle [defined as] being the time period between two successive synchronization signals.

9. (Amended) The decoder system of Claim 8 wherein in a steady state and during [the] normal operating conditions of the decoder system, [said] the control unit is interrupted only during the occurrence of a synchronization signal for audio and video [decode] decoding and presentation.

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10. (Amended) The decoder system of Claim 9 wherein [said] the video decoder fetches and decodes data [only] in response to [the existence of] a task definition packet.

11. (Amended) The decoder of Claim 10 wherein [said] the control unit comprises a central processing unit.

12. (Amended) The decoder system of Claim [11] 1 further comprising:

an audio decoder [for] retrieving audio data stored in the data buffer and [for] decoding the retrieved audio data; and

a video decoder [for] retrieving video data stored in the data buffer and [for] decoding the retrieved video data.

13. (Amended) The decoder system of Claim 12 wherein audio decoder detects the occurrence of a sync word in an audio data frame.

14. (Amended) The decoder system of Claim 13 wherein central processing unit determines the presentation time of an audio data frame using the time stamp of the associated data packet extracted by the stream demultiplexer and the sync word detected by the audio decoder.

15. (Amended) The decoder system of Claim [14] 12 further comprising a set of data buffers coupled to the audio decoder and the video decoder and comprising an audio output buffer and video frame stores.

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16. (Amended) The decoder system of Claim 15 further comprising:

an audio output processor coupled to the audio output buffer [for] retrieving the decoded audio data and [for] processing thereof; and

a video output processor coupled to the video frame stores [for] retrieving the decoded video data and [for] processing thereof.

17. (Amended) The decoder system of Claim 16 further comprising:

an audio digital-to-analog converter coupled to the audio output processor [for] and converting the processed digital data to analog data; and

a video display coupled to the video output processor [for] and displaying the processed video data.

18. (Amended) The decoder system of Claim 1 [17] further comprising [a DVD-DSP] an interface coupled to the stream demultiplexer, the [DVD-DSP] interface receiving a DVD bit stream, and the [DVD-DSP] interface transmitting a DVD byte stream to the stream demultiplexer.

19. (Amended) The decoder system of 1 [18] further comprising a network port coupled to the stream demultiplexer, the network port receiving a DVB bit stream, and the network port transmitting a DVB byte stream to the stream demultiplexer.

20. (Amended) The decoder system of Claim 19 further comprising:

a timer [for] maintaining local current time; and

a clock generator coupled to the timer [for] and maintaining clock references [for the decoder].

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21. (Amended) The decoder system of Claim 1 [20] wherein the data [first] buffer comprises a message queue [for] storing messages from the stream demultiplexer [for the central processing unit].

22. (Amended) The decoder system of Claim 3 [20] wherein the data [first] buffer comprises a video buffer, an audio buffer, a control data buffer and a queue of the [stream demultiplexer] tags, each [stream demultiplexer] tag comprising a pointer to a [video] start code in the video buffer or to an audio sync frame in the audio buffer or to a beginning of a packet in the control data buffer.

23. (Amended) The decoder system of Claim 21 wherein the decoder is implemented as an ASIC.

24. (Amended) A method for decoding data bytes having timing information comprising:

demultiplexing, depacketizing, and storing the demultiplexed and depacketized data bytes in a data buffer without their timing information being stored in the data buffer;

generating messages about the stored data bytes to a control unit; and

generating instructions about the stored data bytes using the control unit.

25. (Amended) The method of Claim 24 wherein the demultiplexing and depacketizing data bytes [comprise] comprises demultiplexing and depacketizing DVD or DVB data bytes.

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26. (Amended) The method of Claim [25] 24 wherein the act of generating messages about the stored data bytes to a control unit comprises generating tags containing information about the time stamps of the data and their storage location in the data buffer, the tags being stored in a memory separate from the data buffer.

27. (Amended) The method of Claim 26 further comprising generating a task definition packet in response to the generation of [said] the tag, each task definition packet specifying the location of the stored data.

31. (Amended) The method of Claim 30 wherein for each data packet the act of generating a task definition packet occurs one synchronization signal cycle before the act of fetching and decoding, [said] the synchronization cycle [defined as] being the time period between two successive synchronization signals.

32. (Amended) The method of Claim 31 further comprising

generating interrupt requests only during the occurrence of a synchronization signal when [said decoder is] in a steady state and [is operating] under normal operating conditions.

33. (Amended) The method of Claim 32 wherein [the act of generating tags to] the control unit [involves generating tags to a control unit that] is a central processing unit.

34. (Amended) The method of Claim 33 further comprising:

retrieving the stored audio data and decoding [thereof] the retrieved audio data using an [the] audio decoder; and

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retrieving the stored video data and decoding the retrieved audio data [thereof] using a [the] video decoder[;].

36. (Amended) The method of Claim 35 further comprising determining the presentation time of [an] the audio data frame using the time stamp of the data packet and the sync word of the audio data frame.

37. (Amended) The method of Claim 36 further comprising storing the decoded audio data and the decoded video data in [a set of data buffer] buffers.

38. (Amended) The method of Claim 37 further comprising:

retrieving the decoded audio data from the [set of data] buffers [for] and processing and supplying the processed data to an audio digital-to-analog converter; and

retrieving the decoded video data from the buffers [second buffer for] and processing and supplying the processed data to a video display.

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Appendix B - Version with markings to show changes made to the Abstract

[DVD/DVB DECODER

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ABSTRACT OF THE DISCLOSURE

A [The] decoder[, in accordance with the present invention,] includes a stream demultiplexer that demultiplexes and depacketizes a stream of DVD or DVB data packets, stores the demultiplexed and depacketized data in a data buffer and subsequently generates a tag specifying the time stamp of the data and the location of the stored data in the data buffer. A [The] CPU, using the information generated for each tag, generates a task definition packet instructing [the] audio and the video decoders about the location and the time that a particular data in the data buffer must be decoded, simplifying [the] operation and design of the decoders. The generation of the task definition packets and the decoding of the data are synchronized with respect to a synchronizing signal generated within the decoder. Because the CPU is not required to demultiplex and depacketize the data, the CPU [it] need not have high processing power and is thus relatively inexpensive. [Under the normal operating conditions, the CPU is interrupted only during the occurrence of the synchronization signals. The generation of the task definition packets and the decoding of the data is pipelined. Therefore, during each synchronization signal, the decoder decodes a data packet in accordance with a task definition packet that the CPU generated during the previous synchronization signal. The audio decoder detects the audio sync word and so informs the CPU which along with the time stamp of the data provided thereto by the stream demultiplexer determines the presentation time of the audio frame.]

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